



Birmingham City Council

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# **Birmingham City of Nature Natural Capital Accounts 2021**

Indicative Natural Capital Value when  
Implementing Birmingham's City of Nature Vision





Birmingham City Council

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Indicative Natural Capital Value when Implementing  
Birmingham's City of Nature Vision

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## KEY FINDINGS

This assessment indicates that the health and wellbeing benefits Council-managed parks and greenspaces provide to its citizens **could increase by £1.65 billion (+14%)** if the Birmingham City of Nature Vision and Delivery Framework 2022-2047 would be implemented in full. This is based on improvements to the existing extent of parks and greenspaces and would result in a **net natural capital asset value of £13.5 billion**.

If in addition, the parks and greenspaces extent could be increased by 14% (655 ha) by 2047 to meet the demands of a growing population, then the natural capital asset value could **increase by a further £0.9 billion (+7%)** to a **net natural capital asset value of £14.4 billion**.

The assessments indicate that investing in enhancing and/or increasing greenspaces in Birmingham is likely to be worthwhile because they **add significant value to people's health and wellbeing** and the investment requirements are likely to be a fraction of the natural capital value added. An overview of the scenario accounts is provided in Table 1.

It should be noted that this assessment is not a forecast but an assessment of possible scenarios. A range of assumptions apply including that intended impacts on greenspace visits materialise. Results are therefore only indicative. It is recommended to update the accounts once more data on interventions and spatial configuration becomes available.

Table 1 **City of Nature Natural Capital Scenario Accounts 2021 Overview**

| <i>Capitalised/stock values stated in £billions; 2020 prices; central estimates</i> | Adjusted values for aggregation                        |  |  |
|---|--|--|--|
|   | Total Natural Capital Value                            |  |  |
|   | <b>Baseline Accounts</b><br>Business As Usual Scenario | <b>BCoN Vision Accounts</b><br>Scenario A; Greenspace Improvements | <b>BCoN Vision+ Accounts</b><br>Scenario B; Greenspace Improvements + Additional Greenspaces |
| <b>Assets</b>   |  |  |  |
| Property value uplift   | £4.66  | £3.69  | £3.95  |
| Council Tax uplift  | £0.57  | £0.57  | £0.61  |
| Physical health benefits  | £4.46  | £6.54  | £6.99  |
| Mental health benefits  | £0.21  | £0.21  | £0.22  |
| Air quality regulation  | £0.32  | £0.33  | £0.35  |
| Recreation  | £1.07  | £1.60  | £1.71  |
| Global climate regulation   | £0.64  | £0.64  | £0.69  |
| Food production from allotments   | £0.08  | £0.08  | £0.08  |
| Biodiversity (non-use benefits only)  | £0.04  | £0.04  | £0.04  |
| Flood risk regulation   | £0.03  | £0.03  | £0.03  |
| Direct parks income   | £0.24  | £0.24  | £0.26  |
| Adjustments   | -£0.01   | -£0.01   | -£0.01   |
| <b>Gross asset value</b>  | <b>£12.30</b>  | <b>£13.96</b>  | <b>£14.93</b>  |
| <b>Liabilities</b>  |  |  |  |
| Parks services expenditure  | £0.46  | £0.46  | £0.49  |
| <b>Net-Value</b>  | <b>£11.85</b><br>to society                            | <b>£13.50</b><br>to society  | <b>£14.44</b><br>to society  |
| Change from baseline  |  | +£1.65   | +£2.60   |
|   |  | +14.0%   | +21.9%   |
| <b>Benefits-Cost Ratio</b>  | <b>26.8 : 1</b>  | <b>30.4 : 1</b>  | <b>30.4 : 1</b>  |

## INTRODUCTION

Over the next 25 years, Birmingham City Council wants to see Birmingham recognised as a City of Nature where its parks and greenspaces are both sustainably managed and funded. To achieve these goals, the Council has developed the emerging Birmingham City of Nature (BCoN) Vision and Delivery Framework.

Birmingham City Council has commissioned WSP to establish indicative natural capital accounts to estimate the added natural capital value if the BCoN Vision and Delivery Framework was implemented in full by 2047. For this purpose, WSP has updated the Birmingham Health Economic Assessment & Natural Capital Accounts established in 2019<sup>1</sup> and developed two BCoN scenarios which have been assessed against the baseline:

- BCoN Vision Accounts (Scenario A; Enhancements of Existing Greenspaces); and
- BCoN Vision+ Accounts (Scenario B; Enhancements of Existing Greenspaces + Additional Greenspaces)

These are indicative assessments based on estimates and assumptions provided by Birmingham City Council and EcoRecord, the local ecological record centre for Birmingham and The Black Country. Apart from assumptions stated below, the methods for establishing the scenarios are similar to the methods used for the 2019 accounts.<sup>1</sup> Birmingham City Council has also been provided with a technical note outlining the methods in more detail.

It is important to stress that the accounts calculated for the two assessed scenarios are not a forecast. They indicate the potential added natural capital value if relevant interventions take place in line with the BCoN Vision and Delivery Framework and related assumptions on changes to Birmingham's greenspaces and changes in visitor numbers materialise as a consequence. Neither should this assessment be interpreted as investment advice.

## UPDATED BASELINE ACCOUNTS (BUSINESS AS USUAL SCENARIO)

To be able to compare the BCoN scenarios and the baseline like-for-like, the 2019 baseline accounts have been updated to 2021 baseline accounts. Updates include adjusting the price level to 2020 prices, adjusting the assessment timescale to match the BCoN timescales, and updates of Council Tax income, parks expenditure, annual greenspace visit estimates and

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<sup>1</sup> Hölzinger, O. & Grayson, N. 2019. Birmingham Health Economic Assessment & Natural Capital Accounts. Birmingham City Council, Birmingham.

carbon values based on latest data and evidence. No changes to the greenspace extent and composition have been assumed.

The updated baseline accounts (Table 2) indicate the total natural capital asset value 2022-2047 in a Business As Usual (BAU) Scenario without the implementation of the BCoN Vision and Delivery Framework or any other changes to Council-managed parks and greenspaces. The assessment indicates that even without implementing the BCoN Vision and Delivery Framework, parks and greenspaces managed by Birmingham City Council contribute significantly to its citizens health and wellbeing with a net natural capital asset value of £11.9 billion. Each £1 the Council spends on its parks and greenspaces is indicated to return nearly £27 in value to society (Benefit-Cost Ratio).

Table 2 **Baseline Natural Capital Accounts 2021 (BAU Scenario)**

| <i><b>Capitalised/stock values stated<br/>in £billions; 2020 prices; central<br/>estimates</b></i> | Adjusted values for aggregation (to avoid double-counting) |                                    |   |                                  |
|--|--|------------------------------------|---|----------------------------------|
|  | <b>Total Natural<br/>Capital Value</b>                     | <b>Health<br/>Benefits</b>         | <b>Direct &amp;<br/>Indirect<br/>Council<br/>Income</b> | <b>Conventional<br/>Accounts</b> |
| <b>Assets</b>  |  |                                    |   |                                  |
| Property value uplift  | £4.66  |                                    |   |                                  |
| Council Tax uplift   | £0.57  |                                    | £0.57   |                                  |
| Physical health benefits   | £4.46  | £4.46                              |   |                                  |
| Mental health benefits   | £0.21  | £0.21                              |   |                                  |
| Air quality regulation   | £0.32  | £0.32                              |   |                                  |
| Recreation   | £1.07  |                                    |   |                                  |
| Global climate regulation  | £0.64  |                                    |   |                                  |
| Food production from allotments  | £0.08  |                                    |   |                                  |
| Biodiversity (non-use benefits only)   | £0.04  |                                    |   |                                  |
| Flood risk regulation  | £0.03  |                                    |   |                                  |
| Direct parks income  | £0.24  |                                    | £0.24   | £0.24                            |
| Adjustments  | -£0.01   |                                    | -£0.01  | -£0.01                           |
| <b>Gross asset value</b>   | <b>£12.30</b>  | <b>£4.99</b>                       | <b>£0.80</b>  | <b>£0.23</b>                     |
| <b>Liabilities</b>   |  |                                    |   |                                  |
| Parks services expenditure   | £0.46  | £0.46                              | £0.46   | £0.46                            |
| <b>Net-Value</b>   | <b>£11.85</b><br>to society                                | <b>£4.53</b><br>in health benefits | <b>£0.34</b><br>to the Council                          | <b>-£0.23</b><br>as per books    |
| <b>Benefits-Cost Ratio</b>   | <b>26.8 : 1</b>  | <b>10.9 : 1</b>                    | <b>1.7 : 1</b>  | <b>0.5 : 1</b>                   |



## **CITY OF NATURE VISION ACCOUNTS – ENHANCEMENTS TO EXISTING GREENSPACES (SCENARIO A)**

To estimate the indicative natural capital asset value if the BCoN framework was implemented in full by 2047, a BCoN Vision Scenario has been assessed to account for habitat improvements based on assumptions made by Birmingham City Council and related analysis by EcoRecord. This scenario is based on planned enhancements to habitats for the existing 4,745 ha of parks and greenspaces the Council manages. Another assumption is that greenspace enhancements and other BCoN activities would nearly double the number of annual greenspace visits to 70 million<sup>2</sup> by 2047.

It is likely that the intended habitat improvements and visitor increases occur subsequently between 2022 and 2047. For the purpose of the indicative calculation, habitat improvements and visitor increases were averaged over the assessment timescale. Please note that a range of assumptions apply and that investment costs for implementing the vision are not accounted for at this stage.

The assessment indicates that, if the BCoN Vision and Delivery Framework was implemented in full and intended impacts such as on greenspace visitation materialise, the net natural capital asset value 2022-2047 could increase to £13.5 billion.<sup>3</sup> This would be £1.65 billion (14%) higher than for the BAU scenario and therefore a significant uplift in terms of health and wellbeing benefits to Birmingham's citizens and wider society.

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<sup>2</sup> Based on the existing population only. Expected population increases may result in up to 100m annual visits by 2047. But increases due to population increases were not considered because they are assumed to take place in all scenarios including the BAU scenario.

<sup>3</sup> Please note that the property uplift is lower for this scenario because it was adjusted for increases in other services and benefit categories to avoid double-counting. The unadjusted property value uplift value does not decline.

Table 3 BCoN Vision Accounts 2021 (Scenario A; Existing Greenspace Extent)

| <i>Capitalised/stock values stated in £billions; 2020 prices; central estimates</i> | Adjusted values for aggregation (to avoid double-counting) |                                    |                                  |                               |
|---|--|------------------------------------|----------------------------------|-------------------------------|
|   | Total Natural Capital Value                                | Health Benefits                    | Direct & Indirect Council Income | Conventional Accounts         |
| <b>Assets</b>   |  |                                    |                                  |                               |
| Property value uplift   | £3.69  |                                    |                                  |                               |
| Council Tax uplift  | £0.57  |                                    | £0.57                            |                               |
| Physical health benefits  | £6.54  | £6.54                              |                                  |                               |
| Mental health benefits  | £0.21  | £0.21                              |                                  |                               |
| Air quality regulation  | £0.33  | £0.33                              |                                  |                               |
| Recreation  | £1.60  |                                    |                                  |                               |
| Global climate regulation   | £0.64  |                                    |                                  |                               |
| Food production from allotments   | £0.08  |                                    |                                  |                               |
| Biodiversity (non-use benefits only)  | £0.04  |                                    |                                  |                               |
| Flood risk regulation   | £0.03  |                                    |                                  |                               |
| Direct parks income   | £0.24  |                                    | £0.24                            | £0.24                         |
| Adjustments   | -£0.01   |                                    | -£0.01                           | -£0.01                        |
| <b>Gross asset value</b>  | <b>£13.96</b>  | <b>£7.07</b>                       | <b>£0.80</b>                     | <b>£0.23</b>                  |
| <b>Liabilities</b>  |  |                                    |                                  |                               |
| Parks services expenditure  | £0.46  | £0.46                              | £0.46                            | £0.46                         |
| <b>Net-Value</b>  | <b>£13.50</b><br>to society                                | <b>£6.62</b><br>in health benefits | <b>£0.34</b><br>to the Council   | <b>-£0.23</b><br>as per books |
| <b>Benefits-Cost Ratio</b>  | <b>30.4 : 1</b>  | <b>15.4 : 1</b>                    | <b>1.7 : 1</b>                   | <b>0.5 : 1</b>                |

## **CITY OF NATURE VISION+ ACCOUNTS – IMPROVEMENTS TO EXISTING GREENSPACES + ADDITIONAL GREENSPACES (SCENARIO B)**

Birmingham City Council Parks Department also hopes to increase the total area of accessible greenspaces it manages by 655 ha (+14%) by 2047 to meet the needs of its growing population. This is why accounts for a second scenario ('BCoN Vision+ Accounts'; Scenario B) have been established to indicate the natural capital value if additional greenspaces would be created.

It is assumed that the additional greenspaces will be added over time. An average greenspace increase of 332.5 ha has been assumed over the total assessment period. It is furthermore assumed that natural capital values, parks income and parks expenditure increase proportionally to the greenspace extent. Investment requirements for the creation of additional greenspaces or potential land acquisition have not been taken into account at this stage.

Not surprisingly, the assessment indicates that creating additional greenspaces would further add significant natural capital value to Birmingham's population. Under Scenario B, the net asset value is indicated to increase to £14.4 billion. This is £2.6 billion (22%) higher than under the BAU Scenario and nearly £1 billion (7%) higher than under Scenario A, respectively. The results of this scenario assessment are summarised in Table 4.

Table 4 BCoN Vision+ Accounts 2021 (Scenario B; Additional Greenspaces)

| <i>Capitalised/stock values stated<br/>in £billions; prices; central<br/>estimates</i> | Adjusted values for aggregation (to avoid double-counting) |                                    |   |                               |
|--|--|------------------------------------|---|-------------------------------|
|  | Total Natural<br>Capital Value                             | Health<br>Benefits                 | Direct &<br>Indirect<br>Council<br>Income | Conventional<br>Accounts      |
| <b>Assets</b>  |  |                                    |   |                               |
| Property value uplift  | £3.95  |                                    |   |                               |
| Council Tax uplift   | £0.61  |                                    | £0.61                                     |                               |
| Physical health benefits   | £6.99  | £6.99                              |   |                               |
| Mental health benefits   | £0.22  | £0.22                              |   |                               |
| Air quality regulation   | £0.35  | £0.35                              |   |                               |
| Recreation   | £1.71  |                                    |   |                               |
| Global climate regulation  | £0.69  |                                    |   |                               |
| Food production from allotments  | £0.08  |                                    |   |                               |
| Biodiversity (non-use benefits only)   | £0.04  |                                    |   |                               |
| Flood risk regulation  | £0.03  |                                    |   |                               |
| Direct parks income  | £0.26  |                                    | £0.26                                     | £0.26                         |
| Adjustments  | -£0.01   |                                    | -£0.01                                    | -£0.01                        |
| <b>Gross asset value</b>   | <b>£14.93</b>  | <b>£7.57</b>                       | <b>£0.86</b>                              | <b>£0.25</b>                  |
| <b>Liabilities</b>   |  |                                    |   |                               |
| Parks services expenditure   | £0.49  | £0.49                              | £0.49                                     | £0.49                         |
| <b>Net-Value</b>   | <b>£14.44</b><br>to society                                | <b>£7.08</b><br>in health benefits | <b>£0.37</b><br>to the Council            | <b>-£0.24</b><br>as per books |
| <b>Benefits-Cost Ratio</b>   | <b>30.4 : 1</b>  | <b>15.4 : 1</b>                    | <b>1.7 : 1</b>                            | <b>0.5 : 1</b>                |

## CARBON STOCK ESTIMATES

A particular priority for Birmingham City Council is climate change mitigation. Tables 5 to 7 summarise the estimated carbon stored in vegetation and corresponding soils on which monetary estimates are based, averaged over the assessment timescale (2022-2047).

If the BCoN Vision (greenspace improvements) is implemented in full, then the average natural capital carbon stock could increase by 7,687 tonnes of carbon to 581,144 tonnes of carbon under Scenario A. If BCoN Vision + (greenspace improvements plus additional greenspace) is implemented, then the natural capital carbon stock could increase by a further 40,680 tonnes of carbon to 621,824 tonnes of carbon under Scenario B.

**Table 5 Estimated Average Natural Capital Carbon Stock: Baseline (BAU Scenario)**

| <b>Physical Accounts Updated Baseline</b>              |                    |  |
|--|--------------------|--|
|  | tonnes carbon (tC) | tonnes CO <sub>2</sub> (tCO <sub>2</sub> ) |
| Total estimated woodland carbon stock                  | 353,129            | 1,296,719                                  |
| ...of which is standing trees                          | 65,256             | 239,624                                    |
| ...of which is litter & deadwood                       | 19,670             | 72,231                                     |
| ...of which is woodland soil carbon (to 1 meter depth) | 268,204            | 984,864                                    |
| Total estimated non-woodland carbon stock              | 220,327            | 807,866                                    |
| ...of which is acid grassland                          | 5,570              | 20,423                                     |
| ...of which is neutral grassland                       | 28,803             | 105,609                                    |
| ...of which is modified (amenity/improved) grassland   | 124,410            | 456,170                                    |
| ...of which is heathland                               | 38,543             | 141,325                                    |
| ...of which is hedgerows                               | 2,268              | 8,315                                      |
| ...of which is fen, marsh & swamp                      | 9,332              | 34,217                                     |
| ...of which is arable & horticulture                   | 11,402             | 41,806                                     |
| Total estimated carbon stock                           | 573,457            | 2,104,585                                  |

**Table 6 Estimated Average Natural Capital Carbon Stock: BCoN Vision (Scenario A; Existing Greenspace Extent)**

| <b>Physical Accounts Scenario A</b>                    |                    |  |
|--|--------------------|--|
|  | tonnes carbon (tC) | tonnes CO <sub>2</sub> (tCO <sub>2</sub> ) |
| Total estimated woodland carbon stock                  | 360,059            | 1,322,166                                  |
| ...of which is standing trees                          | 66,536             | 244,326                                    |
| ...of which is litter & deadwood                       | 20,056             | 73,649                                     |
| ...of which is woodland soil carbon (to 1 meter depth) | 273,467            | 1,004,192                                  |
| Total estimated non-woodland carbon stock              | 221,085            | 810,643                                    |
| ...of which is acid grassland                          | 5,570              | 20,423                                     |
| ...of which is neutral grassland                       | 38,892             | 142,604                                    |
| ...of which is modified (amenity/improved) grassland   | 115,722            | 424,314                                    |
| ...of which is heathland                               | 37,274             | 136,672                                    |
| ...of which is hedgerows                               | 2,754              | 10,097                                     |
| ...of which is fen, marsh & swamp                      | 9,471              | 34,726                                     |
| ...of which is arable & horticulture                   | 11,402             | 41,806                                     |
| Total estimated carbon stock                           | 581,144            | 2,132,810                                  |

**Table 7 Estimated Average Natural Capital Carbon Stock: BCoN Vision+ (Scenario B; Existing and Additional Greenspaces)**

| <b>Physical Accounts Scenario B</b>                    |                    |  |
|--|--------------------|--|
|  | tonnes carbon (tC) | tonnes CO <sub>2</sub> (tCO <sub>2</sub> ) |
| Total estimated woodland carbon stock                  | 385,264            | 1,414,718                                  |
| ...of which is standing trees                          | 71,194             | 261,429                                    |
| ...of which is litter & deadwood                       | 21,460             | 78,804                                     |
| ...of which is woodland soil carbon (to 1 meter depth) | 292,610            | 1,074,485                                  |
| Total estimated non-woodland carbon stock              | 236,560            | 867,388                                    |
| ...of which is acid grassland                          | 5,960              | 21,853                                     |
| ...of which is neutral grassland                       | 41,614             | 152,586                                    |
| ...of which is modified (amenity/improved) grassland   | 123,823            | 454,016                                    |
| ...of which is heathland                               | 39,883             | 146,239                                    |
| ...of which is hedgerows                               | 2,947              | 10,804                                     |
| ...of which is fen, marsh & swamp                      | 10,134             | 37,157                                     |
| ...of which is arable & horticulture                   | 12,200             | 44,733                                     |
| Total estimated carbon stock                           | 621,824            | 2,282,106                                  |

It should be noted that the calculation is based on average carbon values, such as for woodland. It is, therefore, slightly over-estimating the additional carbon in the scenarios as it assumed new woodland will already store average carbon amounts for woodland. The assessment could be refined in the future using a dynamic assessment to account for woodland carbon increases over time once more detail becomes available.



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